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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,006	07/24/2003	Mark B. Lyles	068351.0141	9914

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EXAMINER

MAYES, DIONNE WALLS

ART UNIT	PAPER NUMBER
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1731

DATE MAILED: 09/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/626,006

Applicant(s)

LYLES, MARK B.

Examiner

Dionne Walls Mayes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 58-107 is/are pending in the application.
4a) Of the above claim(s) 66-107 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-6, 8-15, 17-18 and 58-65 is/are rejected.
7) ☒ Claim(s) 7 and 16 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Newly submitted claims 66-107 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: These claims embody different species, i.e. alkylated nucleic acid and capped nucleic acid.

Since applicant has received an action on the merits for the originally presented invention (now drawn to a cross-linked nucleic acid), this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 66-107 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2, 6, 8-11, 15, 17-18, and 58-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akiko et al (US. Pat. No. 4,735,218) in view of Volkens et al (US. Pat. No. 6,406,850).

Akiko discloses, in its "Background of the Invention" section, that tobacco filters having nucleic acid filled into the cellulose filtering material is known for filtering carcinogens, such as benzopyrene (see col. 1, lines 61-64). While Akiko may not

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specifically state that the nucleic acid used in these filters are "crosslinked", Volkert et al discloses that cross-linked nucleic acids are well known for their use in intervention of disorders such as cancer (see col. 1, lines 16-20). Therefore, given that the goal of the filter described in Akiko et al is to prevent cancer formation by providing a carcinogen-filtering means for the filter, it follows that it would have been obvious to one having ordinary skill in the art at the time of the invention to have provided for crosslinked nucleic acids in order to further reduce the likelihood that carcinogenic materials, in smoke, would pass through to the lungs of the smoker to potentially cause cancer.

Regarding claims 3 and 12, It would have been obvious to one having ordinary skill in the art at the time of the invention to have distributed the nucleic acid substantially uniformly on the filtering surface, of any of the filters disclosed in the above references, in order to better appreciate the benefits of the substance in filtering harmful material from fluids.

Regarding claims 6 and 15, it would have been obvious to one having ordinary skill in the art at the time of the invention to have provided a purified DNA in order to ensure optimal removal of carcinogenic material from smoke.

Regarding claims 9 and 18, it follows that there will be more than one carcinogen-containing material since tobacco smoke inherently contains at least two substances that could be considered carcinogens.

Regarding claims 58-59, it follows that the claimed bonds, especially covalent bonding, would occur due to the cross linking since these types of bonds commonly occur in chemical and/or physical modification of chemical substances.

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Regarding claims 60-61, these claims are not deemed to distinguish from the references, patentably, since they refer to method limitations, and the claims are drawn to a product – which is distinguished by its structure.

Regarding claims 62-65, it follows that the cross linking compound would be among the claimed since there are known cross-linking agents.

3. Claims 1-2, 6, 8-12, 15, 17-18 and 58-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 07-241571 (Mechanical Translation) in view of Volkers et al (US. Pat. No. 6,406,850).

JP 07-241570 discloses a filter for removing a mutagenic substance, said filter having deoxyribonucleic acid (DNA) fixed thereon, wherein the mutagenic substance is adsorbed by the filter. This filter is capable of being used as a filter for tobacco smoke since it can be constructed of cellulose acetate – a typical cigarette filter material (see abstract). While JP 07-241570 may not specifically state that the nucleic acid used in these filters are “crosslinked”, Volkers et al discloses that cross-linked nucleic acids are well known for their use in intervention of disorders such as cancer (see col. 1, lines 16-20). Therefore, given that the goal of the filter described in JP 07-241570 is to prevent cancer formation by providing a mutagen-filtering means for the filter, it follows that it would have been obvious to one having ordinary skill in the art at the time of the invention to have provided for crosslinked nucleic acids in order to further reduce the likelihood that mutagenic materials, in smoke, would pass through to the lungs of the smoker to potentially cause cancer.

Regarding claims 3 and 12, It would have been obvious to one having ordinary skill in the art at the time of the invention to have distributed the nucleic acid substantially uniformly on the filtering surface, of any of the filters disclosed in the above references, in order to better appreciate the benefits of the substance in filtering harmful material from fluids.

Regarding claims 6 and 15, it would have been obvious to one having ordinary skill in the art at the time of the invention to have provided a purified DNA in order to ensure optimal removal of carcinogenic material form smoke.

Regarding claims 9 and 18, it follows that there will be more than one carcinogen-containing material since tobacco smoke inherently contains at least two substances that could be considered carcinogens.

Regarding claims 58-59, it follows that the claimed bonds, especially covalent bonding, would occur due to the cross linking since these types of bonds commonly occur in chemical and/or physical modification of chemical substances.

Regarding claims 60-61, these claims are not deemed to distinguish from the references, patentably, since they refer to method limitations, and the claims are drawn to a product – which is distinguished by its structure.

Regarding claims 62-65, it follows that the cross linking compound would be among the claimed since there are known cross-linking agents.

4. Claims 1,4-6, 8-10, 13-15, 17-18 and 58-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over FR 2,800,299 (English abstract) in view of Volkers et al (US. Pat. No. 6,406,850).

FR 2,800,299 discloses a filter which comprises a compartment that contains nucleic acid in order to remove carcinogens and mutagens from tobacco smoke (see abstract). Since there is not mention that said compartment comprises anything other than nucleic acid, it is presumed that such compartment has 100% nucleic by weight – which meets the limitation of claims 5 and 14. While FR 2,800,299 may not specifically state that the nucleic acid used in these filters are “crosslinked”, Volkens et al discloses that cross-linked nucleic acids are well known for their use in intervention of disorders such as cancer (see col. 1, lines 16-20). Therefore, given that the goal of the filter described in FR 2,800,299 is to prevent cancer formation by providing a mutagen-filtering means for the filter, it follows that it would have been obvious to one having ordinary skill in the art at the time of the invention to have provided for crosslinked nucleic acids in order to further reduce the likelihood that mutagenic materials, in smoke, would pass through to the lungs of the smoker to potentially cause cancer.

Regarding claims 3 and 12, It would have been obvious to one having ordinary skill in the art at the time of the invention to have distributed the nucleic acid substantially uniformly on the filtering surface, of any of the filters disclosed in the above references, in order to better appreciate the benefits of the substance in filtering harmful material from fluids.

Regarding claims 6 and 15, it would have been obvious to one having ordinary skill in the art at the time of the invention to have provided a purified DNA in order to ensure optimal removal of carcinogenic material form smoke.

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Regarding claims 58-59, it follows that the claimed bonds, especially covalent bonding, would occur due to the cross linking since these types of bonds commonly occur in chemical and/or physical modification of chemical substances.

Regarding claims 60-61, these claims are not deemed to distinguish from the references, patentably, since they refer to method limitations, and the claims are drawn to a product – which is distinguished by its structure.

Regarding claims 62-65, it follows that the cross linking compound would be among the claimed since there are known cross-linking agents.

Allowable Subject Matter

5. Claims 7 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dionne Walls Mayes whose telephone number is (571) 272-1195. The examiner can normally be reached on Mon-Fri, 7AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven P. Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Dionne W. Mayes", with a long horizontal flourish extending to the right.

Dionne Walls Mayes
Primary Examiner
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August 29, 2005